

**Instructions:**

Evaluate the homework against the outlined criteria in the below rubric, assigning a rating to each criterion. Add points earned across all criteria and convert the total points to a letter grade, assigning a “+” or “-” letter grade designation at your discretion.

A (+/-)	90+	C (+/-)	40-64	F (+/-)	<15
B (+/-)	65-89	D (+/-)	15-39		

**Notes:**

The deployed assignment utilizes the **sklearn** library to train models on a set of data and used to make predictions. The source code should also be deployed to **Github** or **Gitlab**. There are more models that could have been used for this HW, the 3 given solutions are only a select few. Therefore, if a student uses a different model that we did not provide as a solution, they will not be docked any points as long as they still meet the requirements specified in the rubric.

**Rubric for Exoplanet Exploration:**

	<b>Mastery 20 points</b>	<b>Approaching Mastery 15 points</b>	<b>Progressing 10 points</b>	<b>Emerging 5-0 points</b>	<b>Incomplete</b>
<b>Data Preprocessing</b>	<p>The submission does all of the following:</p> <ul style="list-style-type: none"> <li>✓ Unnecessary Columns are removed.</li> <li>✓ All rows containing NaN are removed.</li> <li>✓ Data is correctly split into a training and test set.</li> <li>✓ Numerical data is scaled accordingly.</li> </ul>	<p>The submission does 3 of the following:</p> <ul style="list-style-type: none"> <li>✓ Unnecessary Columns are removed.</li> <li>✓ All rows containing NaN are removed.</li> <li>✓ Data is correctly split into a training and test set.</li> <li>✓ Numerical data is scaled accordingly.</li> </ul>	<p>The submission does 2 of the following:</p> <ul style="list-style-type: none"> <li>✓ Unnecessary Columns are removed.</li> <li>✓ All rows containing NaN are removed.</li> <li>✓ Data is correctly split into a training and test set.</li> <li>✓ Numerical data is scaled accordingly.</li> </ul>	<p>The submission does 0-1 of the following:</p> <ul style="list-style-type: none"> <li>✓ Unnecessary Columns are removed.</li> <li>✓ All rows containing NaN are removed.</li> <li>✓ Data is correctly split into a training and test set.</li> <li>✓ Numerical data is scaled accordingly.</li> </ul> <p>-OR-</p> <ul style="list-style-type: none"> <li>✓ No preprocessing done.</li> </ul>	<p>No submission was received</p> <p>-OR-</p> <p>Submission was empty or blank</p> <p>-OR-</p> <p>Submission contains evidence of academic dishonesty</p>

<b>Model Creation &amp; Feature Selection</b>	<p>The submission does all of the following:</p> <p><b>Model Creation:</b></p> <ul style="list-style-type: none"> <li>✓ Creates, trains, and tests at least 2 different classification models</li> <li>✓ Correctly sets <code>x</code> and <code>y</code> (<code>koi_disposition</code>) variables</li> </ul> <p><b>Feature Selection:</b></p> <ul style="list-style-type: none"> <li>✓ Uses some form of feature selection method to identify insignificant variables (<code>feature_importance</code>, <code>RFE</code>, <code>backwards elimination</code>, etc.)</li> <li>✓ Remove insignificant variables and retrain models with the significant features</li> </ul>	<p>The submission does 3 of the following:</p> <p><b>Model Creation:</b></p> <ul style="list-style-type: none"> <li>✓ Creates, trains, and tests at least 2 different classification models</li> <li>✓ Correctly sets <code>x</code> and <code>y</code> (<code>koi_disposition</code>) variables</li> </ul> <p><b>Feature Selection:</b></p> <ul style="list-style-type: none"> <li>✓ Uses some form of feature selection method to identify insignificant variables (<code>feature_importance</code>, <code>RFE</code>, <code>backwards elimination</code>, etc.)</li> <li>✓ Remove insignificant variables and retrain models with the significant features</li> </ul>	<p>The submission does 2 of the following:</p> <p><b>Model Creation:</b></p> <ul style="list-style-type: none"> <li>✓ Creates, trains, and tests at least 2 different classification models</li> <li>✓ Correctly sets <code>x</code> and <code>y</code> (<code>koi_disposition</code>) variables</li> </ul> <p><b>Feature Selection:</b></p> <ul style="list-style-type: none"> <li>✓ Uses some form of feature selection method to identify insignificant variables (<code>feature_importance</code>, <code>RFE</code>, <code>backwards elimination</code>, etc.)</li> <li>✓ Remove insignificant variables and retrain models with the significant features</li> </ul>	<p>The submission does 0-1 of the following:</p> <p><b>Model Creation:</b></p> <ul style="list-style-type: none"> <li>✓ Creates, trains, and tests at least 2 different classification models</li> <li>✓ Correctly sets <code>x</code> and <code>y</code> (<code>koi_disposition</code>) variables</li> </ul> <p><b>Feature Selection:</b></p> <ul style="list-style-type: none"> <li>✓ Uses some form of feature selection method to identify insignificant variables (<code>feature_importance</code>, <code>RFE</code>, <code>backwards elimination</code>, etc.)</li> <li>✓ Remove insignificant variables and retrain models with the significant features</li> </ul> <p>-OR-</p> <ul style="list-style-type: none"> <li>✓ Only uses non-classification models.</li> </ul>	
<b>Model Tuning</b>	<p>The submission does all of the following:</p> <p><b>Model Tuning:</b></p> <ul style="list-style-type: none"> <li>✓ Uses <code>GridSearch</code> or some hyperparameter tuning to find the best parameters for the model</li> <li>✓ The tuned model is used to make the final exoplanet prediction</li> </ul>	<p>The submission does 2 of the following:</p> <p><b>Model Tuning:</b></p> <ul style="list-style-type: none"> <li>✓ Uses <code>GridSearch</code> or some hyperparameter tuning to find the best parameters for the model</li> <li>✓ The tuned model is used to make the final exoplanet prediction</li> </ul>	<p>The submission does 1 of the following:</p> <p><b>Model Tuning:</b></p> <ul style="list-style-type: none"> <li>✓ Uses <code>GridSearch</code> or some hyperparameter tuning to find the best parameters for the model</li> <li>✓ The tuned model is used to make the final exoplanet prediction</li> </ul>	<p>The submission does 0 of the following:</p> <p><b>Model Tuning:</b></p> <ul style="list-style-type: none"> <li>✓ Uses <code>GridSearch</code> or some hyperparameter tuning to find the best parameters for the model</li> <li>✓ The tuned model is used to make the final exoplanet prediction</li> </ul>	
<b>Model Accuracy</b>	<ul style="list-style-type: none"> <li>✓ Model scores greater than 85% accuracy on test data.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Model scores between 85% and 75% accuracy on test data.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Model scores between 75% and 50% accuracy on test data.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Model scores less than 50% accuracy on test data.</li> </ul>	
<b>Reporting</b>	<p>The submission does all of the following:</p> <p><b>Reporting</b></p> <ul style="list-style-type: none"> <li>✓ README compares each of the models' performances and predictions</li> <li>✓ README summarizes the findings and makes assumptions</li> </ul>	<p>The submission does 2 of the following:</p> <p><b>Reporting</b></p> <ul style="list-style-type: none"> <li>✓ README compares each of the models' performances and predictions</li> <li>✓ README summarizes the findings and makes assumptions</li> </ul>	<p>The submission does 1 of the following:</p> <p><b>Reporting</b></p> <ul style="list-style-type: none"> <li>✓ README compares each of the models' performances and predictions</li> <li>✓ README summarizes the findings and makes assumptions</li> </ul>	<p>The submission does 0 of the following:</p> <p><b>Reporting</b></p> <ul style="list-style-type: none"> <li>✓ README compares each of the models' performances and predictions</li> <li>✓ README summarizes the findings and makes assumptions</li> </ul>	

	<p>based on the data and their models.</p> <p>✓ README discusses the predictions of the possible exoplanets with their models.</p>	<p>based on the data and their models.</p> <p>✓ README discusses the predictions of the possible exoplanets with their models.</p>	<p>based on the data and their models.</p> <p>✓ README discusses the predictions of the possible exoplanets with their models.</p>	<p>based on the data and their models.</p> <p>✓ README discusses the predictions of the possible exoplanets with their models.</p> <p>-OR-</p> <p>✓ Does not submit a README</p>	
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